

April 2, 2015

EX PARTE NOTICE VIA ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Room TW-A325
Washington, D.C. 20554

Re: *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002, AU Docket No. 14-252*
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268
Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269
Office of Engineering and Technology Seeks to Supplement the Incentive Auction Proceeding Record Regarding Potential Interference Between Broadcast Television and Wireless Services, ET Docket No. 14-14

Dear Ms. Dortch:

On March 31, 2015, Kathleen Ham, Steve Sharkey, and Chris Wieczorek, of T-Mobile USA, Inc. ("T-Mobile"),¹ Dr. Greg Rosston and Dr. Andy Skrzypacz (both by phone), consultants to T-Mobile, and Trey Hanbury and Tom Peters of Hogan Lovells US LLP, counsel to T-Mobile, met with Martin Doczkat, Melissa Dunford, Gary Epstein, Chris Helzer, Matthew Hussey, Sasha Javid, Julius Knapp, Evan Kwerel, John Leibowitz, Jonathan McCormack, Aspasia Paroutsas, Barbara Pavon, Jim Schlichting, Karen Sprung, and Joel Taubenblatt, of the Incentive Auction Task Force, and Dr. Paul Milgrom and Dr. Ilya Segal (both by phone) of Auctionomics, a consulting firm that is advising the Commission.

During the meeting, the parties reviewed the attached slide presentation regarding considerations for the 600 MHz Incentive Auction design. In particular, T-Mobile emphasized that the Commission should hold the incentive auction as scheduled in early 2016 and should increase the quantity and quality of the reserve available in the incentive auction. Specifically, the Commission should increase the reserve to 50% of the available spectrum as proposed in T-Mobile's Petition for

¹ T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

Reconsideration² and adopt its proposal to include Category 1 spectrum or the least impaired blocks in the reserve where available. Furthermore, the Commission should implement a 20 megahertz limit on any bidder's spectrum reserve acquisitions during the auction.³

During the meeting and in a brief telephone conference with Mr. Epstein on April 1, 2015, T-Mobile representatives discussed the need to ensure that the reserve trigger, if used at all, be set at a level that reasonably ensures that the reserve spectrum will be available to competitive carriers and is not subject to gaming opportunities. Throughout the auction, the Commission's goal should be to encourage truthful bidding and limit opportunities for inefficient and potentially harmful bidding practices. The Commission should either eliminate the reserve trigger or ensure that it does not exceed \$1.25 per MHz-POP in the top twenty-five PEAs. The Commission should adopt measures to prohibit bidding practices that would defeat the reserve's pro-competitive purpose. Additional safeguards, such as Sprint's proposal to initiate the forward rounds of the incentive auction with the spectrum reserve in place, would help ensure multiple service providers have the opportunity to gain access to low-band spectrum.⁴

The Commission should also seek to minimize license impairments consistent with clearing at least 84 megahertz of spectrum. It should take care to ensure that the auction design does not drive toward a pre-determined level of impairment. One aspect of minimizing impairments is to encourage sufficient participation by broadcasters and limit use of Dynamic Reserve Prices, or some alternative mechanism, to the minimum necessary to achieve a given clearing target. T-Mobile further encouraged the Commission to adopt policies that promote competitive, market-based compensation for broadcast licenses.

T-Mobile then addressed the statistical measure used to assess broadcast impairments. While granular analysis of broadcast impairments can be desirable, the Commission need not rely upon the F(50,10) statistical measure to assess broadcast contours in determining whether the design objectives of the auction have been met. Impairment assessments based on a F(50,50) statistical

² See *Policies Regarding Mobile Spectrum Holdings*, T-Mobile USA, Inc. Petition for Reconsideration, WT Docket No. 12-269 at 11 (Aug. 11, 2014) ("A reserved spectrum allotment [] apportioning at least half of the available spectrum into the reserve spectrum band at each level of initial spectrum clearing, would advance the Commission's goals of ensuring robust competition among four nationwide providers, as well as local and regional carriers."); T-Mobile USA, Inc. Reply to Oppositions to Petition for Reconsideration, WT Docket No. 12-269 (Oct. 6, 2014). See also *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, T-Mobile USA, Inc. Petition for Reconsideration, GN Docket No. 12-268 (Sept. 15, 2014); T-Mobile USA, Inc. Reply to Oppositions to Petition for Reconsideration, GN Docket No. 12-268 (Nov. 24, 2014).

³ *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, Comments of T-Mobile USA, Inc., AU Docket No. 14-252, GN Docket No. 12-268 at 4, 6 (Feb. 20, 2015); Reply Comments of T-Mobile USA, Inc., AU Docket No. 14-252, GN Docket No. 12-268 at 12 (Mar. 13, 2015).

⁴ See Letter from Rafi Martina, Counsel to Sprint Corporation, to Marlene Dortch, Secretary, Federal Communications Commission, AU Docket No. 14-252, GN Docket No. 12-268 at 2-3 (Mar. 19, 2015) (explaining the need to address "foreclosure strategies by non-reserve-eligible bidders" and proposing "the Commission designate the spectrum reserve blocks at the outset of the forward auction" as opposed to at some later stage of the forward auction bidding).

measure provide ample information to determine whether or not the auction design constraints have been exceeded.⁵ However, the Commission should make available enough information to allow carriers to perform the F(50,10) calculations themselves or conduct other analysis necessary to more fully understand the extent to which a license may be impaired.

T-Mobile discussed the location of broadcast impairments within the 600 MHz broadband spectrum. To the extent impairments in the 600 MHz broadband spectrum cannot be avoided, the Commission should strategically position those impairments in the uplink band as opposed to the downlink band.⁶ Prior to positioning broadcast incumbents within the uplink band, however, the Commission should take advantage of available 600 MHz duplex gap and guard band spectrum to avoid co-channel interference with broadband operations to the greatest extent possible, provided that it can be positioned to avoid interfering with broadband downlinks. Positioning unavoidable broadcast impairments in the 600 MHz duplex gap and guard band will allow for more extensive, higher performance 600 MHz broadband transmissions in the affected geographic area license(s) than would be possible if the broadcast impairment were co-channel with broadband operations.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed in the above-referenced dockets. Please direct any questions regarding this filing to me.

Respectfully submitted,

/s/ Trey Hanbury

Trey Hanbury
Counsel to T-Mobile USA, Inc.

Enclosures

⁵ See, e.g., Letter from AJ Burton, Counsel to T-Mobile USA, Inc., to Marlene Dortch, Secretary, Federal Communications Commission, ET Docket No. 14-14, GN Docket No. 12-268 at 2 (June 13, 2014) (explaining that "T-Mobile has used the F(50,50) parameter for purposes of modeling broadcast interference into wireless receivers in its previous technical submissions to the Commission" because the "the inherent design of wireless broadband systems and the robustness of LTE systems" typically makes more detailed statistical measurements of limited additional value); AT&T Services, Inc., T-Mobile USA, Inc., and Verizon, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Ex Parte Letter*, GN Docket No. 12-268 (June 13, 2014) (recommending the use of the Longley-Rice F(50,50) methodology for predicting potential interference between broadcast television and wireless services).

⁶ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Comments of T-Mobile USA, Inc., GN Docket No. 12-268, AU Docket No. 14-252 at 15-16 (Feb. 20, 2015) (arguing that wherever the Commission "has the discretion to choose the location of a 600 MHz band encumbrance, the Commission generally should impair the uplink band to maximize the amount of spectrum available for broadband use"); Reply Comments of T-Mobile USA, Inc., GN Docket No. 12-268, AU Docket No. 14-252 at 28-29 (Mar. 13, 2015) (explaining that "placing impairments in the uplink band is technically superior to placing them in the downlink band"); Comments of Verizon, GN Docket No. 12-268, AU Docket No. 14-252 at 17-20 (Feb. 20, 2015) (supporting the placement of unavoidable broadcast impairments in the uplink as opposed to the downlink band).

cc: Martin Doczkat
Melissa Dunford
Gary Epstein
Chris Helzer
Matthew Hussey
Sasha Javid
Julius Knapp
Evan Kwerel
John Leibovwitz
Jonathan McCormack
Paul Milgrom
Aspasia Paroutsas
Barbara Pavon
Ilya Segal
Jim Schlichting
Karen Sprung
Joel Taubenblatt



600 MHz Incentive Auction

Considerations for Auction Design

March 31, 2015



Recommendations

- Hold the 600 MHz auction as scheduled in early 2016
 - Consumer demand for wireless broadband is ever-increasing
 - Success of AWS-3 confirms pent-up spectrum demand
 - Delayed auction could result in substantial economic costs
- Expand and strengthen the spectrum reserve
 - The spectrum reserve is essential to increase competition and protect against foreclosure
 - A 40 MHz reserve will allow at least two reserve-eligible bidders to offer competitive services in a PEA
 - A 20 MHz limitation on reserve-block purchases prevents anti-competitive foreclosure within the reserve
 - AT&T and Verizon are reserve-eligible across 40% of the US population
 - If 20 MHz limitation results in excess supply in the reserve, the excess would move to the un-reserved portion



Reserve Trigger is Unnecessary

- Reserve trigger is superfluous to ensuring vigorous competition or to covering broadcast expenses
- Prohibitive reserve trigger would risk auction failure by decreasing revenues and spectrum clearing
- If included, trigger should be limited:
 - No greater than \$1.25 per MHz-POP
 - Top 25 Markets
 - Gross, not net revenue
 - Category 1, not Category 2



Dynamic Reserve Pricing (DRP)

- DRP or similar mechanisms may help to optimize spectrum clearing and address “hold-outs”
- But DRP and similar mechanisms may result in impairments that are not necessary to satisfy the Final Stage Rule
- Limitations on DRP or use of an alternative mechanism may mitigate impairment risk and protect broadcast interests
- Whatever the mechanism, DRP or similar proposals should not interfere with market-based compensation to broadcasters



Initial Spectrum Clearing Target – Balanced Approach

- Refine the impairment threshold for the initial spectrum-clearing target:
 - Major Markets: 9 of top 10 markets should have four or more licenses
 - Scale to Clearing Targets: 10% for more than 84 megahertz; 20% for 84 megahertz or less
- These proposals will maximize spectrum clearing – particularly in key markets – while avoiding excessive impairments

Prices Following an Extended Round

- When the Commission lowers its spectrum-clearing target or when an extended round fails to satisfy the Final Stage Rule, price escalations during extended round bidding should not carry over to the next bidding stage
- Prior extended round prices may not reflect current clearing targets, resulting in artificially depressed demand
- Clock prices in the new stage should not exceed either (i) the bids of the last normal bidding round prior to the extended round or (ii) the amount necessary to satisfy the Final Stage Rule of the current auction stage, whichever is less



Auctioning Impaired Licenses

- The Commission should reject calls to auction only unimpaired or lightly impaired spectrum in the forward auction
 - Excluding impaired licenses leaves valuable spectrum on the table that furthers broadband goals
 - Impaired licenses retain considerable utility, and there is no basis to adopt a “zero-tolerance” impairment policy
 - The proposed discounts can preserve the generic nature of licenses within each category
- Additionally:
 - Distinguish between uplink and downlink impairments
 - Discount international impairments based on likelihood of change
 - Auction heavily impaired licenses in a separate, follow-on auction

Repacked Broadcasters in the 600 MHz Band

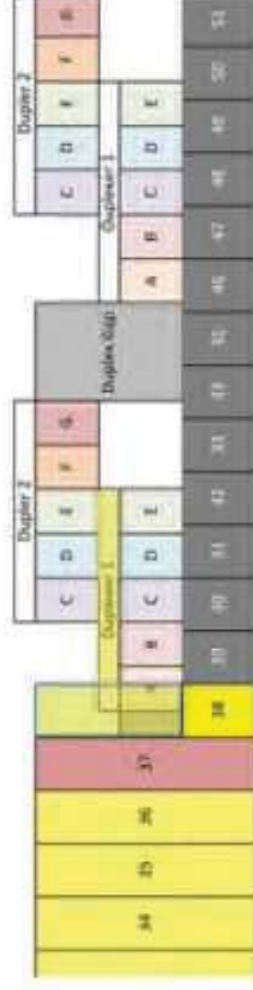
- Repacked broadcasters that cannot be relocated outside of the 600 MHz broadband spectrum should be placed in the uplink portion of the band
 - Downlink capacity is more valuable for broadband deployment than uplink capacity
 - Uplink placement will interfere with a fixed and limited number of base stations receivers; by comparison, downlink placement would cause interference on any frequency supported by a mobile device's 600 MHz duplexer
 - Uplink placement creates more flexibility in locating impairments and for deploying mitigation techniques

Repacked Broadcasters in the 600 MHz Band

Diagram 1 – DTV Operations in Downlink Band

Scenario

One Channel Needed



Result

Duplexer 1 receives energy from DTV channel 38 causing interference to mobile device on all five blocks (25 MHz) covered by that duplexer. Mobile devices using duplexer 2, covering blocks C to G would be unaffected.

Diagram 2 – DTV Operations in Uplink Band

Scenario

One Channel Needed



Result

One MHz of duplex gap impaired, A uplink block impaired, B uplink block impaired in smaller area, blocks C – G uplinks unimpaired through base station filtering, all downlink blocks usable

Appendix

Incentive Auction Flowchart

